



Southern
California
Gas Company

A Sempra Energy utility

Clean Transportation

THE CALIFORNIA LOW CARBON FUEL STANDARD

MARKET OPPORTUNITY FOR NGVs



**NGVTF
DOWNEY, CA
NOVEMBER 19, 2008**

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Presentation Overview



- Background and overview of California's Low Carbon Fuel Standard (LCFS)
- Think about this – How can carbon markets be a catalyst for infrastructure investment?

Background: The Low Carbon Fuel Standard



- Jan 2007 - Governor Schwarzenegger signs executive order S-01-07 establishing the California Low Carbon Fuel Standard (LCFS)

□ Drivers:

- AB 32 passes in September 2006; 1990 CO₂ levels by 2020
- 40% of California's CO₂ inventory comes from transportation
- 96% of California's transportation fuels are petroleum based

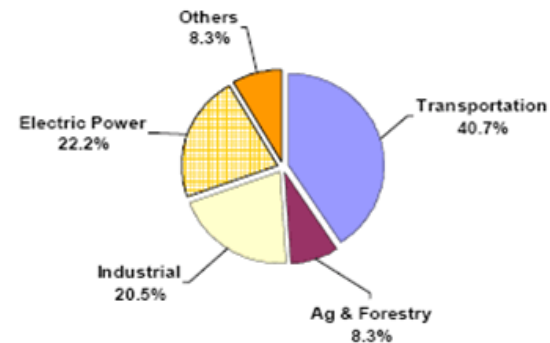
□ Low Carbon Fuel Standard (LCFS) Basics:

- World's first "*performance based*" GHG standard for transportation fuels
- 10% reduction in California's transportation fuel mix by 2020
- Market based approach
- Life-cycle analysis (LCA) basis
- Measurement metrics are Millions of metric tons, and mass of CO₂ per unit of energy (gCO₂/MJ)

□ Schedule:

- CARB Hearing scheduled March 2009
- Implementation January 2010

Figure 3 – Greenhouse Gas Emission Inventory - 2005



Overview of draft regulatory structure and requirements

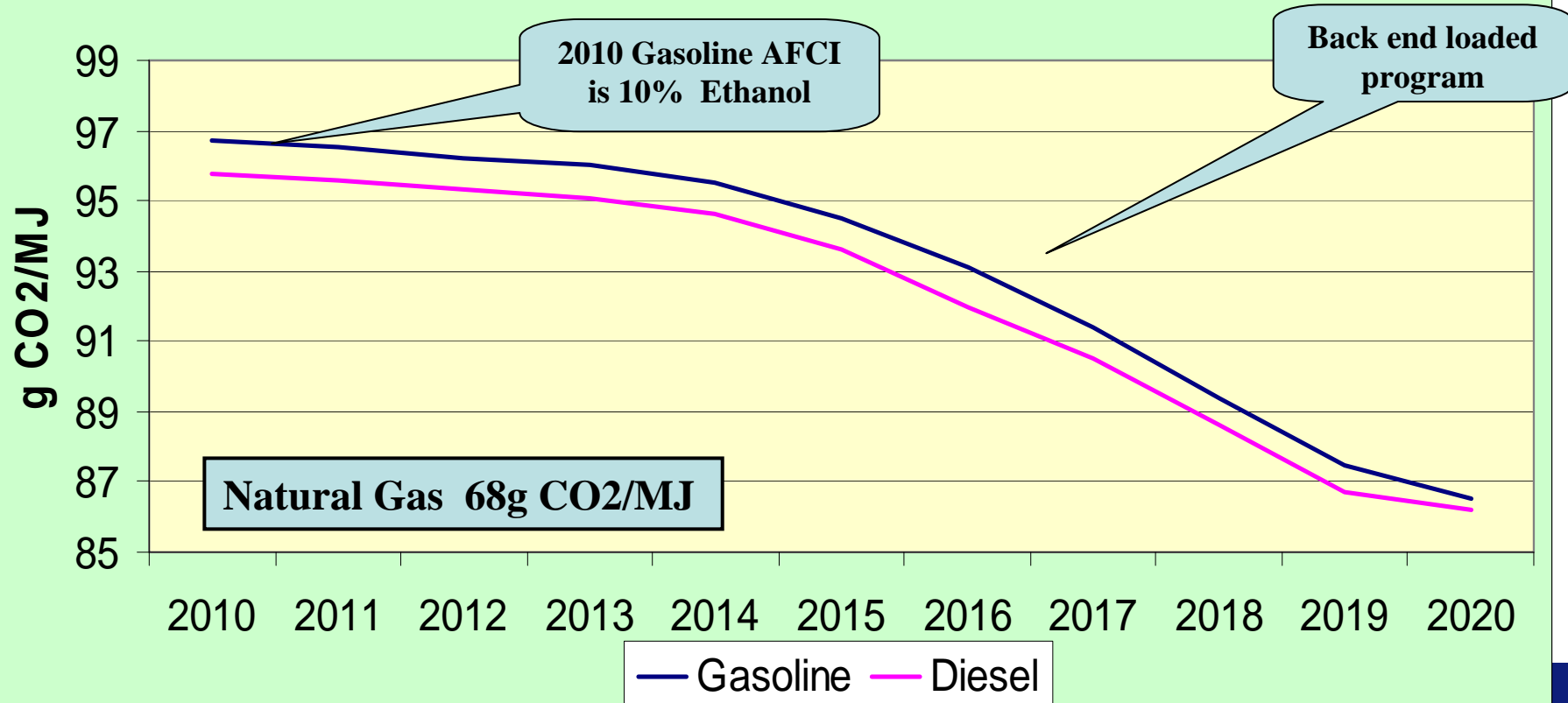


- ❑ Two fuel markets – Gasoline & Diesel
- ❑ Applies to all transportation fuel providers with few exceptions (low volume)
- ❑ Market credits can be earned and sold, banked or retired; do not expire (2020)
 - Banking allowed, no borrowing, can run a 1 year deficit if <10% of your req.
 - LCFS credits may be traded into other validated carbon markets, i.e. AB 32 market, not visa versa (*pending, may not hold*)
- ❑ Quarterly reporting, annual true-up April 30 of each successive year
- ❑ Requirements:
 - Gasoline and Diesel Carbon Intensities (AFCI) very close
 - ✓ Gasoline: 96.7 => 86.5 grams CO₂/mega joule (g CO₂/MJ)
 - ✓ Diesel: 95.8 => 86.2 g CO₂/MJ
 - ✓ Natural gas ~68 g CO₂/MJ

Transportation Fuel Market Requirements



Transportation Fuel Carbon Intensities CARB LCFS 2010 - 2020



What does this mean for the NGV market?



□ Opportunity

- NGVs offer a GHG footprint 20 – 30% below the standards
 - ✓ NGVs provide a cost-effective, ready made solution – today!
 - ✓ Biogas increases GHG benefits dramatically
- Petroleum fuel providers will need credits
 - ✓ Biodiesel integration will be more challenging than expected
 - ✓ Cellulosic ethanol is years off
 - ✓ CARB will hold firm to targets if alternatives are available to fill the need
- Regulatory construct can enable infrastructure investment
 - ✓ Renewable gas projects, contractually nominate output
- Help us make this happen – join the CNGVC!